802.17 Frame Structure and Bridging Ad-Hoc Support

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Bridging Ad-Hoc Frame Structure Sub-team

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Outline

- Objective
- Recommendations
- Potential Frame Structure Options

OBJECTIVE

- Provide BAH requirements on 802.17 Frame Format
- Make recommendations to 802.17 Frame Format technical prime(s) for consideration

Terminology

- Ring Local MAC
  - MAC addresses of the actual stations on a Ring
- Remote MAC
  - Global MAC addresses
  - End to end MAC addresses
  - End station MAC addresses

  Original Packet
  - Packet provided by the end station
- DSID: Destination Station Identifier
  - Could be 1 byte value or MAC address (6 bytes)
- SSID: Source Station Identifier
  - Could be 1 byte value or MAC address (6 bytes)

BAH Requirements

Frame format shall

- Support explicit delivery of station identifiers (e.g., DSID and SSID)
- Support a means of indicating that the packet needs to be flooded (on the Ring)
- Minimize impact to existing Frame Format
- Minimize impact to MAC

Recommendation

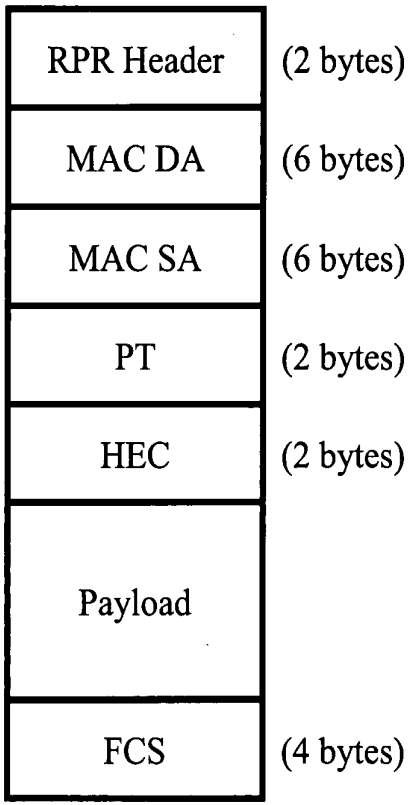
Propose the 802.17 WG create a Frame Format Ad-hoc group to further explore the modifications to the 802.17 Frame Formats to satisfy BAH requirements and other requirements, and make recommendation

Back Up Material:

Frame Structure Options

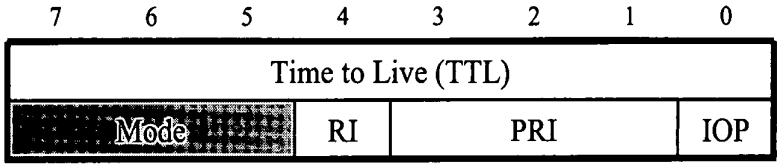
Frame Format

- Basic format as currently defined in 802.17 D0.1



RPR Header Support of Flooding Indicator

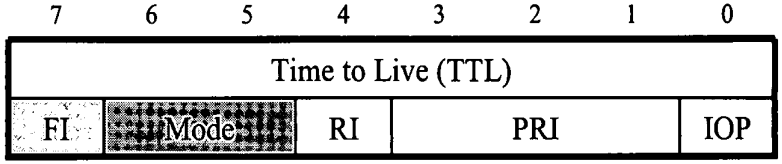
RPR Header Format



Mode Values

Value	Description
0	Reserved
1	Reserved
2	Reserved
3	Steering only data
4	Protection Control packet
5	Control packet
6	Fairness packet
7	Data Packet

Modified RPR Header Format



Mode Values

Value	Description
0	Steering only data
1	Control packet
2	Fairness packet
3	Data Packet

Flooding Indicator (FI) Values

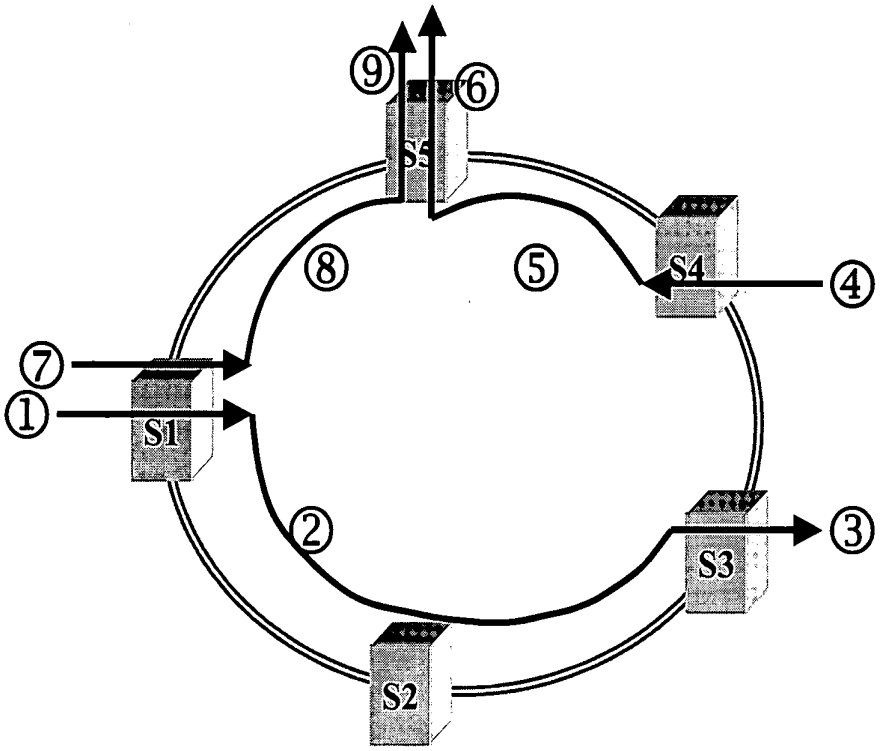
Value	Description
0	No Flooding
1	Flooding

Open Issues

- If two Routers or Hosts on the same Ring are communicating with each other using 802.17 MACs, can the DA and/or SA parameter(s) associated with the Request Primitive be outside the domain of the 802.17 MAC addresses?
  - Can the 802.17 MAC support MAC Clients that have multiple (unique) MAC address?
  - Is this within the scope of 802.17?

Native Packet Format to RPR Frame Format

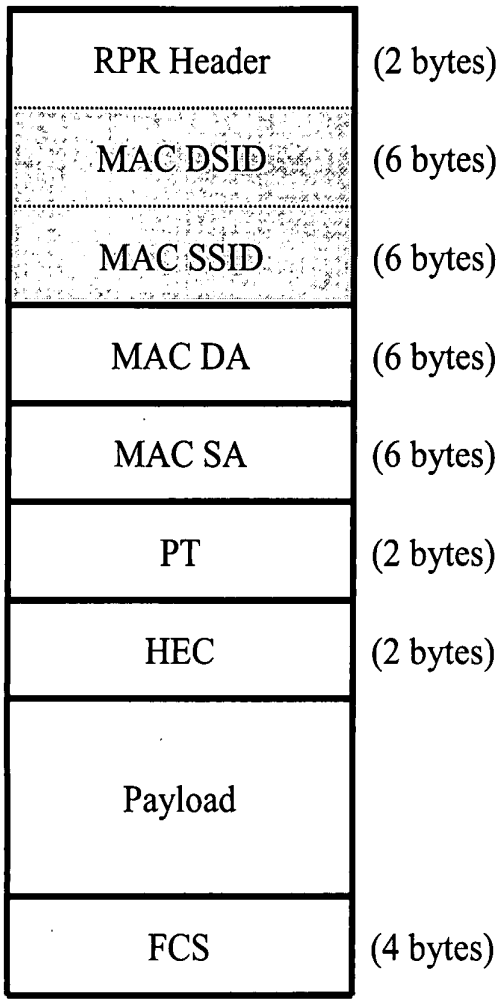
- S1 and S3 are 802.1D/Q Compliant Bridges
- S2, S4, and S5 are Routers/Hosts



①③④⑥⑦⑨ 802.3 Frame

②⑤⑧ RPR Frame

Frame Structure with Station Identifiers: Option #1a

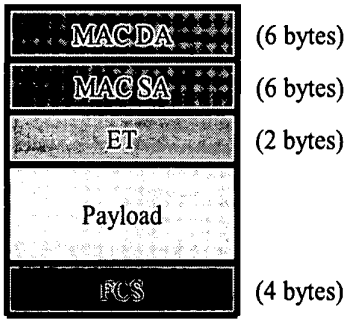


- Frame syntax changed due to DSID and SSID fields.
- MAC SA & DA fields can either be Ring local or Remote (I.e., end-to-end MAC addresses or end station MAC addresses)

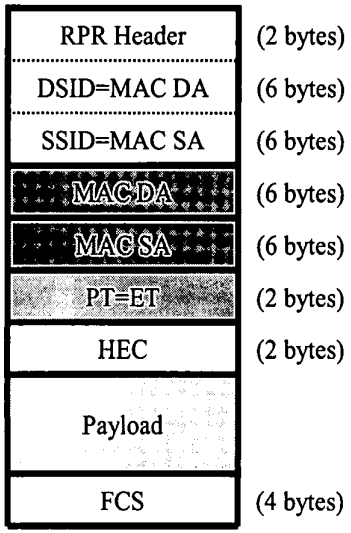
Option #1a: Example

Locally Originated and Terminated Packet Flow

Router/Host/Server Client Data Frame

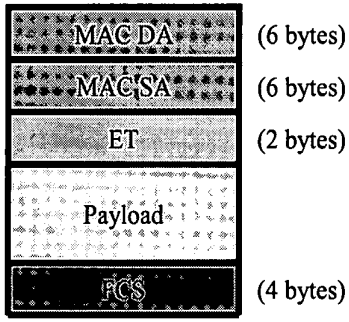


Resulting RPR Frame

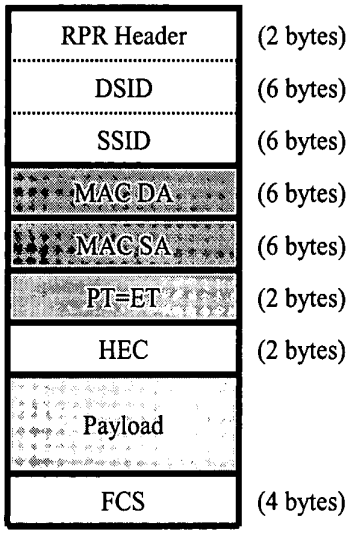


Packet Flow Involving Bridges

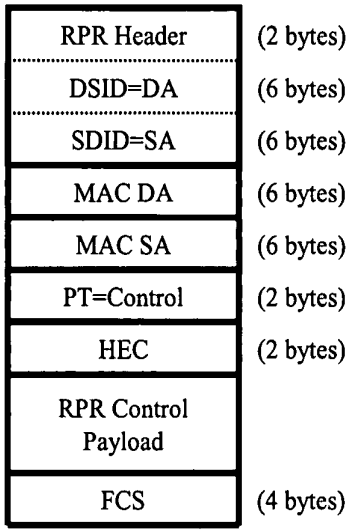
Bridge Client Data Frame



Resulting RPR Frame

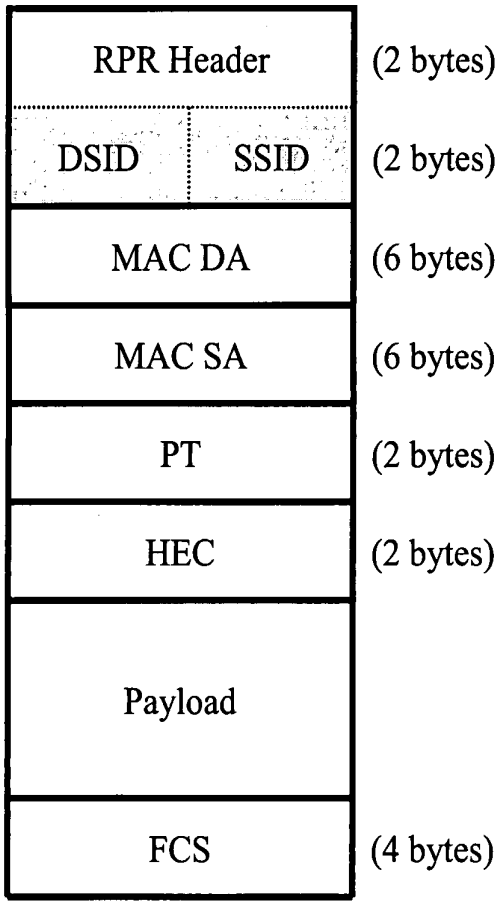


RPR Control Packet



Values of DSID/SSID
- May, but need not, be MAC DA/SA
- Must be a member of the Ring Topology Image

Frame Structure with Station Identifiers: Option #1b

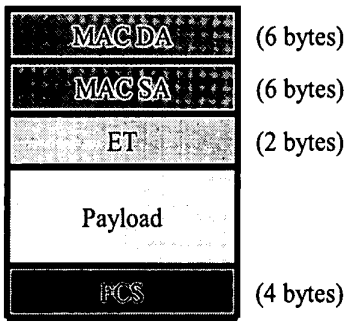


- Frame syntax changed due to DSID and SSID fields
- MAC reception rules changed to accommodate DSID and SSID
- MAC SA & DA fields can be either Ring local or Remote (I.e., end-to-end MAC addresses or end station MAC addresses)

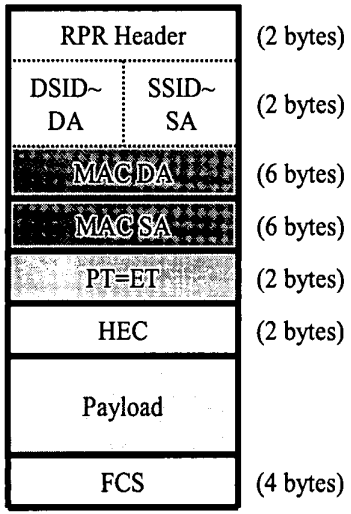
Option #1b: Example

Locally Originated and Terminated Packet Flow

Router/Host/Server Client Data Frame

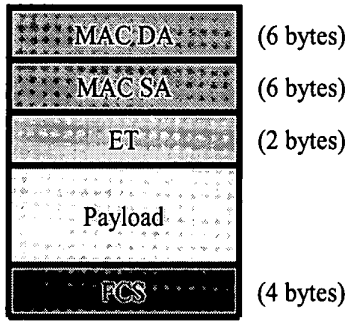


Resulting RPR Frame

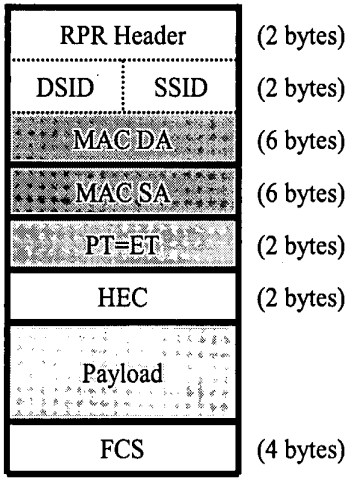


Packet Flow Involving Bridges

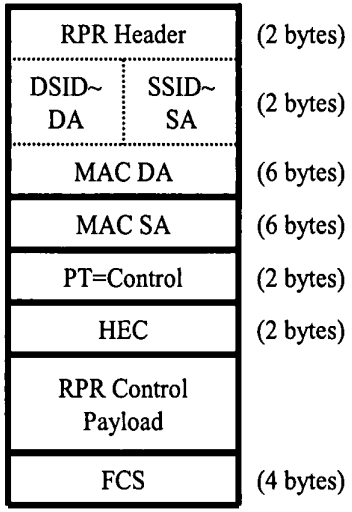
Bridge Client Data Frame



Resulting RPR Frame



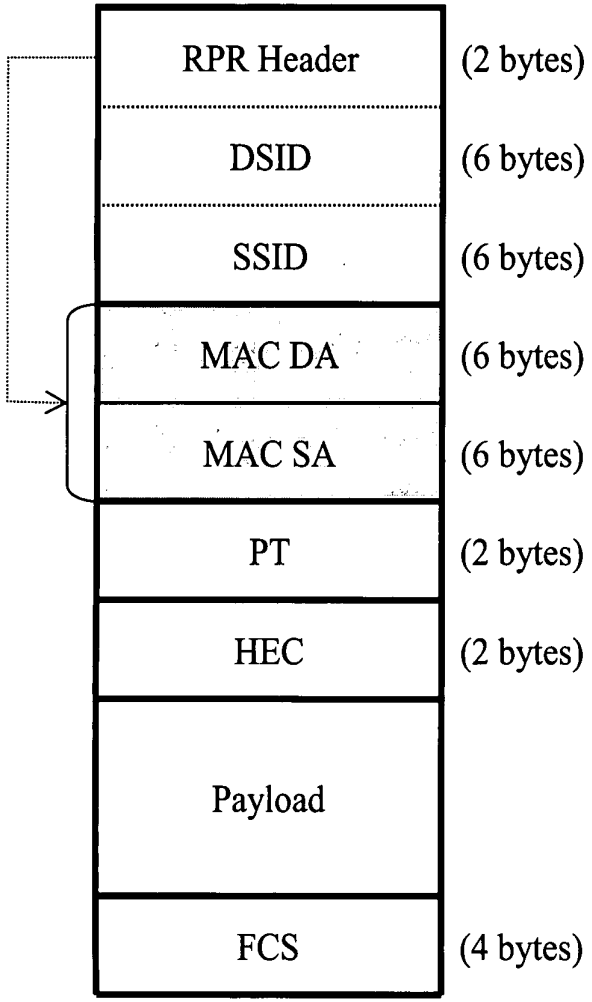
RPR Control Packet



Values of DSID/SSID

- May, but need not, be derived from MAC DA/SA (e.g., using SID DB)
- Must be a member of the Ring Topology Image

Frame Structure with Station Identifiers: Option #1c



- Bit in RPR Header indicates presence of Remote MAC addresses in frame format
- Frame syntax changed when Remote MACs are present